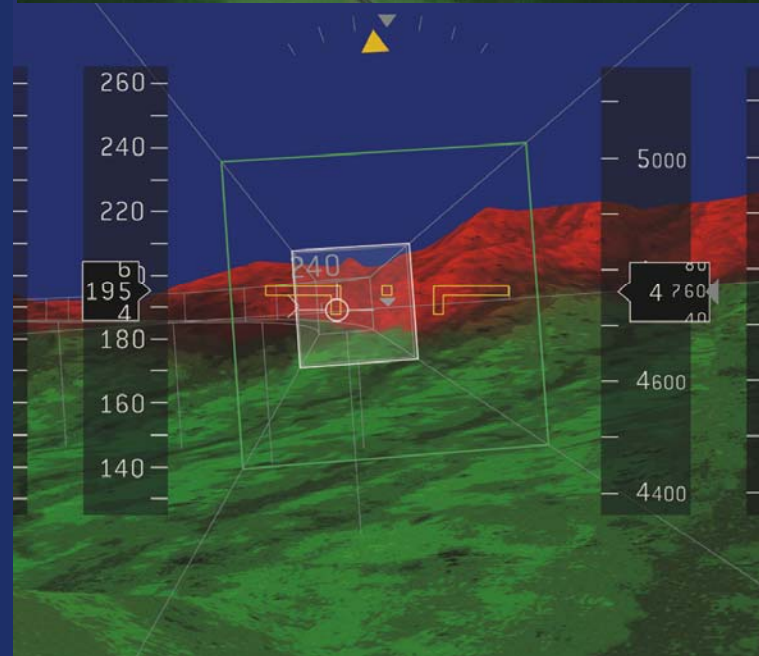


# Part 23 Policy Update

## Systems and Flight Test

**Presentation to:** FTW DER Conference  
**Name:** Peter L. Rouse  
**Date:** May 25, 2006

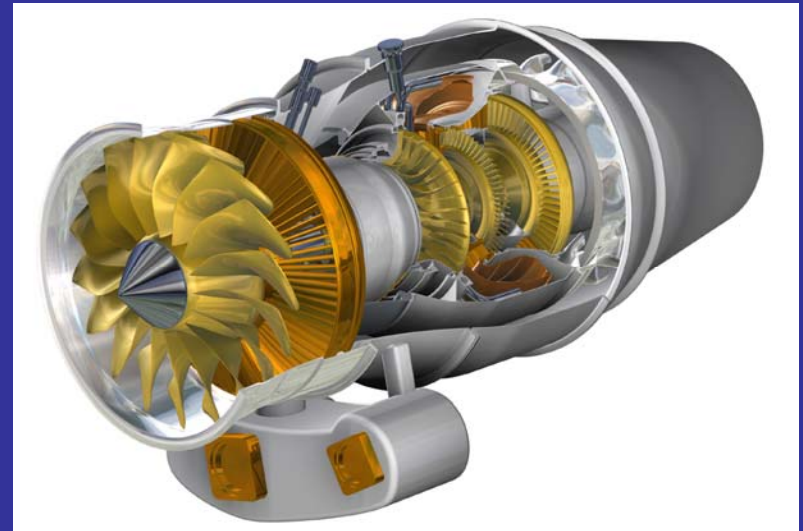


**Federal Aviation  
Administration**

# Presentation Overview

---

- Small Jet Projects
- New Systems Policy



## Current Jet Activities

- At least 12 new certification programs planned for '06-'07
- No less than 10 others in the planning stage
- Jet Rules being worked to incorporate lessons learned

Cessna Citation



Lear 23



Raytheon 390



Adam 700



Sino SJ30-2



Cessna Mustang



Eclipse 500



# Small Jet Projects

---



Eclipse



Mustang



# Small Jet Projects



Diamond D-Jet



ADAM  
AIRCRAFT

# Small Jet Projects

---

Embraer Light Jet (300) and Very Light Jet (100)



# Small Jet Projects



- Cockpit Mock-up for both the models 100 and 300
- Cabin Mock-up for model 100
- Cabin for 300 includes an additional row of seats

# Small Jet Projects

---

## Grob SPn Utility Jet





# Small Jet Projects

---

## ATG Javelin



# New Policy

---

## 2002

- PS-ACE100-2001-004, Guidance for Reviewing Certification Plans to Address Human Factors for Part 23 Airplanes

## 2003

- PS-ACE100-2002-004, Diesel Engine Installations
- PS-ACE100-2002-002, Installation Approval of MFDs Using the AML STC Process
- PS-ACE100-2002-008, Propeller Testing to  $V_D$

# New Policy

---

## 2004

- PS-ACE100-2004-10023, Flammability of Electrical Wire
- PS-ACE100-2004-10024, Installation of Electronic Engine Control for Reciprocating Engines
- PS-ACE100-2002-007, Pitot Heat Indication
- PS-ACE100-2002-005, Circuit Breakers and Fuses

## 2005

- ACE-05-04, 1-G Stall Speed
- PS-ANE-2003-35-1-R0, Propeller Ice Protection Equipment

# New Policy - AC 23.1309

---

## AC 23.1309 – Safety Assessment

- In Work
- Revised FHA Table
- Include Complex Hardware
- Revised Definition
- Clarification on Lightning and HIRF



# New Policy - AC 23.1309

---

## AC 23.1309 – Safety Assessment



“Maybe we shouldn’t have run that wire so close to the fuel tank.”

# New Policy - AC 23.1311 - 1B

---

## Electronic Displays

- Design and installation requirements
- Address new certification issues for electronic display installations that have come up in the past 18 mo. such as ELOS for reversionary standby displays
- Single AHRS

# New Policy - AC 23-17

---

## AC 23-17 is being revised

- Capture policy from past couple of years
- Add new suggestions
  - Autopilots – Clarify the need to apply 23.1301 and 23.1309 for digital systems
  - Complex electronic hardware and software issues

# New Environmental Policy - 23.1301- 23.1309

---

## The guidance -

- allows the depth of the environmental qualification to be commensurate with the severity of the hazard
- It is based on the five failure condition classifications defined in AC 23.1309-1C ranging from no safety effect to catastrophic
- should reduce the amount of environmental qualification, especially for equipment that has no safety effect and equipment that has only minor failure conditions

**High voltage systems (HID Lights, etc) can be a source of EMI and may need to be tested to a higher environmental levels or EMI**



# New Guidance – GAMA Doc #12

---

## “GAMA Class” cockpit

- Meant to streamline certification
- Establishes a baseline for all new part 23 displays – PFD & MFD
- Defines field-of-view for many items
- Leaves creative freedom, but states minimum standard
- Glass to Glass transition easier

# **New Policy - Synthetic Vision AC**

---

## **Brief Overview of the Topics Addressed in the AC**

- **Intended Function**
- **Synthetic Terrain/Vision Imagery**
- **Terrain Alert System – not necessarily TAWS**
- **Airplane Reference Relative to Terrain**
- **Heading Integrity**
- **Horizon Line**
- **Moving Map that Corresponds to and Compliments the SV PFD Display**
- **Failure Modes**

# **New Policy - Synthetic Vision AC**

---

- **Terrain Color and Depiction**
- **Minimums Audio Callout Capability**
- **Cultural Features**
- **Terrain Resolution**
- **Terrain Database Integrity**
- **Display Update Rates**
- **Aircraft Flight Manual Supplement**
- **Unusual Attitude Recovery**

# New Policy - Synthetic Vision AC

---

## Specific Guidance For Pathway Displays

- Pathway Lateral and Vertical Limits
- Precision Approach Guidance
- Pathways and Terrain

## Test and Evaluation Methods and Criteria for Compliance



# Approved Synthetic Terrain / Vision

## Universal's Vision 1



Federal Aviation  
Administration

# Approved Synthetic Terrain / Vision

## Chelton Flight Systems



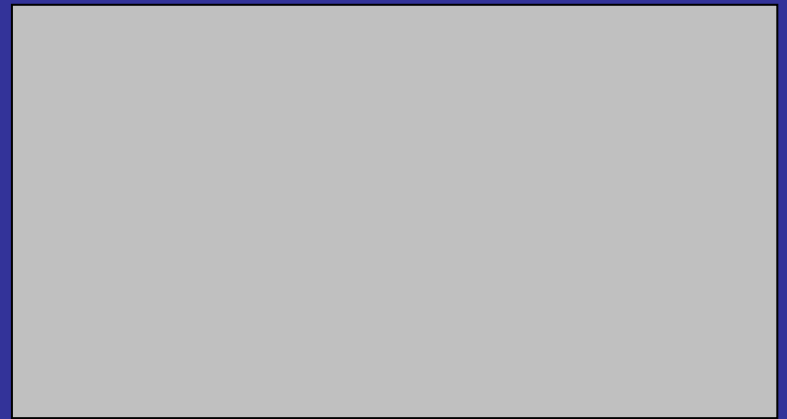
## New Policy - Synthetic Vision AC



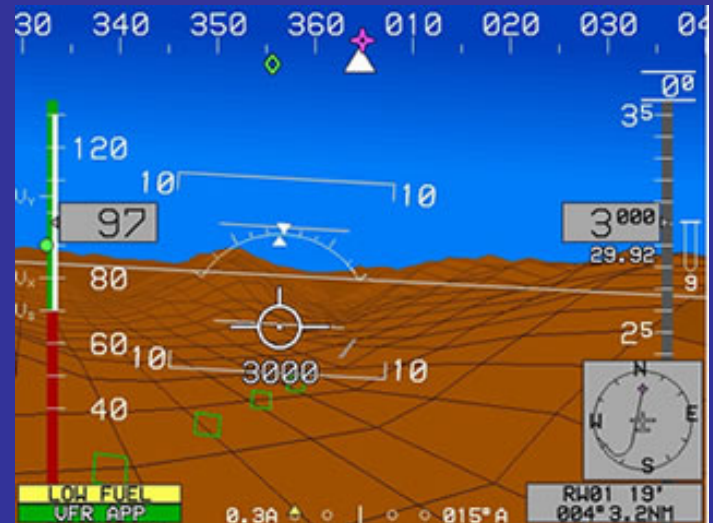
## Conventional Display



## New Version of Conventional Display



## Instrument Conditions Outside View



## Synthetic Vision Display



# New Policy - Synthetic Vision AC



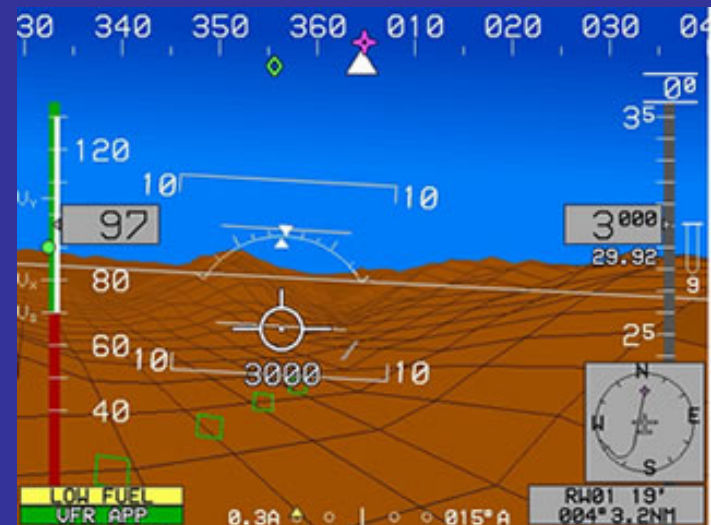
Conventional Display



Visual Conditions Outside View



New Version of Conventional Display



Synthetic Vision Display

# New Policy - Synthetic Vision AC



**Simulated CAT III Approach**



# Policy – Additional Issues

---

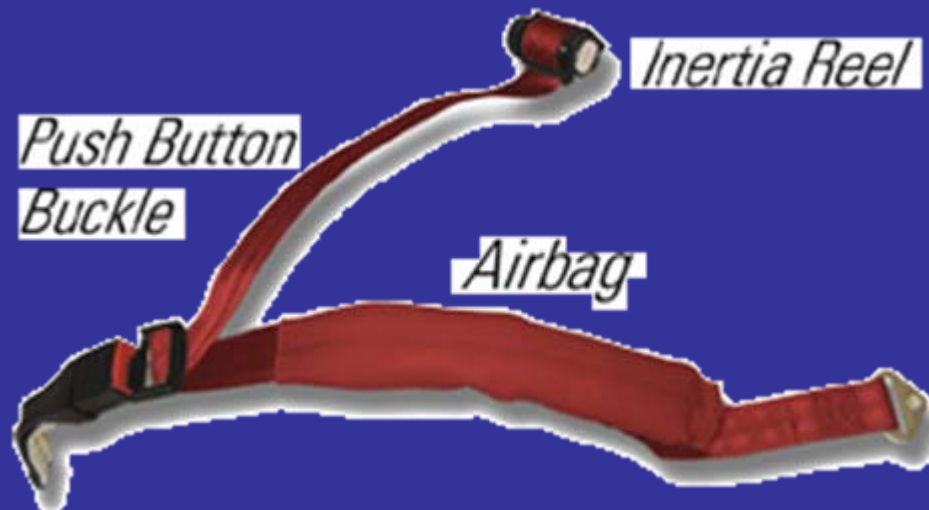
## AC 23.1309-1C Figure 2 Shows Classes of Airplanes :

- Already provided relaxation from the old requirements of AC 23.1309 – 1B
- Design assurance levels are shown
- Probability values are shown
- The design assurance levels are for software and complex hardware – not for lightning and HIRF

# New Technology – Safety is Selling...Finally

---

## Inflatable Seat Belt



# New Technology – Safety is Selling...Finally

---



# New Technology – Safety is Selling...Finally





# New Technology – Safety is Selling...Finally

---



**Obstacle Databases Are A Good Thing**



# Questions?

---

